

US EPA ARCHIVE DOCUMENT

# Contents

---

|                       |    |
|-----------------------|----|
| Acknowledgments ..... | ix |
|-----------------------|----|

## Day One: Wednesday, September 11

|                                                          |     |
|----------------------------------------------------------|-----|
| Welcome and Introduction .....                           | 1-1 |
| <i>Dr. Elizabeth Southerland and Dr. Thomas Armitage</i> |     |

### BIOACCUMULATION OVERVIEW AND APPROACHES

#### **Bioaccumulation Overview and Approaches ..... 1-3**

|                                                           |     |
|-----------------------------------------------------------|-----|
| Contaminated Sediments:                                   |     |
| State of the Science and Future Research Directions ..... | 1-5 |
| <i>Dr. Gilman D. Veith</i>                                |     |

#### **Field and Laboratory Methods for Measuring Bioaccumulation ..... 1-9**

*Dr. Peter Chapman, Moderator*

|                                                                                               |      |
|-----------------------------------------------------------------------------------------------|------|
| Methods for Assessing Sediment Bioaccumulation<br>in Marine/Estuarine Benthic Organisms ..... | 1-11 |
| <i>Dr. Henry Lee II</i>                                                                       |      |

|                                                                                                                  |      |
|------------------------------------------------------------------------------------------------------------------|------|
| Methods for Assessing Bioaccumulation of<br>Sediment-Associated Contaminants with Freshwater Invertebrates ..... | 1-25 |
| <i>Dr. Christopher G. Ingersoll</i>                                                                              |      |

|                                                    |      |
|----------------------------------------------------|------|
| Kinetic Models for Assessing Bioaccumulation ..... | 1-47 |
| <i>Dr. Peter Landrum</i>                           |      |

|                                          |      |
|------------------------------------------|------|
| Session One: Questions and Answers ..... | 1-51 |
|------------------------------------------|------|

#### **Interpretation and Applications of Bioaccumulation Results ..... 2-1**

*Dr. Richard Pruell, Moderator*

|                                                                          |     |
|--------------------------------------------------------------------------|-----|
| Reference Sediment Approach for Determining Sediment Contamination ..... | 2-3 |
| <i>Mr. Norman I. Rubinstein</i>                                          |     |

|                                                      |     |
|------------------------------------------------------|-----|
| Development of Tissue Residue Threshold Values ..... | 2-9 |
| <i>Dr. David R. Mount</i>                            |     |

|                                                                                               |      |
|-----------------------------------------------------------------------------------------------|------|
| Use of Tissue Residue Data in Exposure and<br>Effects Assessments for Aquatic Organisms ..... | 2-21 |
| <i>Mr. L. Jay Field</i>                                                                       |      |

---

|                                                                                                             |      |
|-------------------------------------------------------------------------------------------------------------|------|
| Comments on the Significance and Use of<br>Tissue Residues in Sediment Toxicology and Risk Assessment ..... | 2-25 |
| <i>Dr. Lynn S. McCarty</i>                                                                                  |      |
| Quantification of Ecological Risks to<br>Aquatic Biota from Bioaccumulated Chemicals .....                  | 2-31 |
| <i>Mr. Burt K. Shephard</i>                                                                                 |      |
| Session Two: Questions and Answers .....                                                                    | 2-53 |
| <b>Modeling Bioavailability of Sediment Contaminants ..... 3-1</b>                                          |      |
| <i>Mr. Nelson Thomas, Moderator</i>                                                                         |      |
| Equilibrium Partitioning and Organic Carbon Normalization .....                                             | 3-3  |
| <i>Dr. Dominic M. Di Toro</i>                                                                               |      |
| Estimating Bioaccumulation Potential in Dredged Sediment Regulation .....                                   | 3-7  |
| <i>Dr. Victor A. McFarland</i>                                                                              |      |
| Development of Bioaccumulation Factors for<br>Protection of Fish and Wildlife in the Great Lakes .....      | 3-19 |
| <i>Dr. Philip M. Cook</i>                                                                                   |      |
| From Modeling to Criteria: Integrated Approach to Criteria Development .....                                | 3-29 |
| <i>Ms. Mary C. Reiley</i>                                                                                   |      |
| Session Three: Questions and Answers .....                                                                  | 3-33 |

## **Day Two: Thursday, September 12**

|                                                                                      |      |
|--------------------------------------------------------------------------------------|------|
| <b>Food Chain Models and Bioenergetics ..... 4-1</b>                                 |      |
| <i>Dr. Lawerence Burkhard, Moderator</i>                                             |      |
| Food Chain Models for Predicting Bioaccumulation .....                               | 4-3  |
| <i>Dr. Frank Gobas</i>                                                               |      |
| Use of Food Web Models to Evaluate Bioaccumulation Data .....                        | 4-5  |
| <i>Dr. John P. Connolly</i>                                                          |      |
| Bioaccumulation Modeling of PCBs<br>in the Hudson Estuary: A Review and Update ..... | 4-19 |
| <i>Dr. Robert V. Thomann</i>                                                         |      |
| Session Four: Questions and Answers .....                                            | 4-23 |

## **BIOACCUMULATION AND RISK ASSESSMENT**

|                                |     |
|--------------------------------|-----|
| Risk Assessment Overview ..... | 5-1 |
| <i>Dr. Dorothy Patton</i>      |     |

---

|                                                                                                                                 |            |
|---------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>Human Health-Based Risk Assessment .....</b>                                                                                 | <b>5-3</b> |
| <i>Dr. Marc Tuchman, Moderator</i>                                                                                              |            |
| Methodology for Assessing Human Health-Based Risks .....                                                                        | 5-5        |
| <i>Dr. Judy L. Crane</i>                                                                                                        |            |
| Bioaccumulation Models and Applications:<br>Setting Sediment Cleanup Goals in the Great Lakes .....                             | 5-9        |
| <i>Ms. Amy Pelka</i>                                                                                                            |            |
| Use of Human Health- and Ecological-Based<br>Goals in Developing a Whole River<br>Sediment Strategy: Fox River, Wisconsin ..... | 5-31       |
| <i>Mr. Robert L. Paulson</i>                                                                                                    |            |
| Development of Health-Based Sediment Criteria for Puget Sound .....                                                             | 5-35       |
| <i>Ms. Laura B. Weiss</i>                                                                                                       |            |
| Development of Bioaccumulation Guidance for<br>Dredged Material Evaluations in EPA Region 2 .....                               | 5-47       |
| <i>Mr. Alex Lechich</i>                                                                                                         |            |
| Session Five: Questions and Answers .....                                                                                       | 5-61       |

**Ecological-Based Risk Assessment .....** **6-1***Dr. James Andreasen, Moderator*

|                                                                   |      |
|-------------------------------------------------------------------|------|
| Use of Bioaccumulation Data in Aquatic Life Risk Assessment ..... | 6-3  |
| <i>Dr. Wayne R. Munns, Jr.</i>                                    |      |
| Wildlife Risk Assessment .....                                    | 6-9  |
| <i>Dr. David Charters</i>                                         |      |
| Session Six: Questions and Answers .....                          | 6-15 |

**Day 3: Friday, September 13****BIOACCUMULATION RESULTS AND DECISION-MAKING**

|                                                                                         |            |
|-----------------------------------------------------------------------------------------|------------|
| <b>Integrating Bioaccumulation Results into EPA's<br/>Decision-Making Process .....</b> | <b>7-1</b> |
| <i>Dr. Elizabeth Southerland, Moderator</i>                                             |            |

|                                                                                                                     |     |
|---------------------------------------------------------------------------------------------------------------------|-----|
| Opening Remarks .....                                                                                               | 7-3 |
| <i>Dr. Elizabeth Southerland</i>                                                                                    |     |
| Bioaccumulation Testing and Interpretation for the Purpose of<br>Sediment Quality Assessment: Status and Needs..... | 7-5 |
| <i>Mr. Michael Kravitz</i>                                                                                          |     |

---

|                                                                                                                 |             |
|-----------------------------------------------------------------------------------------------------------------|-------------|
| <b>Panel Presentations .....</b>                                                                                | <b>7-15</b> |
| Bioaccumulation Results and Decision-Making:<br>The Superfund Program .....                                     | 7-17        |
| <i>Dr. Lawrence Zaragoza</i>                                                                                    |             |
| Sediment Bioaccumulation—A National Pollutant Discharge<br>Elimination System (NPDES) Program Perspective ..... | 7-23        |
| <i>Mr. James Pendergast</i>                                                                                     |             |
| Integrating Bioaccumulative Results into EPA's Decision-Making Process .....                                    | 7-31        |
| <i>Mr. Thomas Murray</i>                                                                                        |             |
| U.S. EPA/OPPT and Sediments: Screening New and Existing Chemicals for<br>Potential Environmental Effects .....  | 7-35        |
| <i>Dr. Maurice Zeeman</i>                                                                                       |             |
| Dredged Material Management Program .....                                                                       | 7-49        |
| <i>Mr. Craig Vogt</i>                                                                                           |             |
| Dredged Material Management: A Regional Perspective .....                                                       | 7-51        |
| <i>Mr. Mario Del Vicario</i>                                                                                    |             |
| Session Seven: Questions and Answers .....                                                                      | 7-53        |
| <b>Speakers' Biographies .....</b>                                                                              | <b>8-1</b>  |

## ATTACHMENTS

- Agenda
- List of Attendees

